



# DUAL INDUCTION LOG

Company RITCHIE EXPLORATION INC.  
 Well WHITHAM-SMITH TRUST #1  
 Field WILDCAT  
 County WICHITA  
 State KANSAS

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 Well WHITHAM-SMITH TRUST #1  
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 County WICHITA  
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Location: API #: 15-203-20342-00-00  
 2432' & 976' FWL  
 SEC 35 TWP 16S RGE 37W  
 Permanent Datum GROUND LEVEL Elevation 3344  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services CNL/CDL MEL/BHCS  
 Elevation K.B. 3352'  
 D.F. N/A  
 G.L. 3344'

Date	9/7/2018
Run Number	ONE
Depth Driller	4960'
Depth Logger	4958'
Bottom Logged Interval	4957'
Top Log Interval	250'
Casing Driller	8.625" @ 263'
Casing Logger	262'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	7800
Density / Viscosity	9.4 63
pH / Fluid Loss	10.0 10.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.40 @ 75
Rmt @ Meas. Temp	0.30 @ 75
Rmc @ Meas. Temp	0.54 @ 75
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.24 @ 126
Operating Rig Time	4 HOURS
Max Rec. Temp. F	126
Equipment Number	91
Location	HAYS
Recorded By	IAN MABB
Witnessed By	JOHN GOLDSMITH

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.  
 RUSSEL SPRINGS, KS.  
 SOUTH TO COUNTY LINE, AND 6 MILES SOUTH TO G RD,  
 1 MILE WEST , 1/2 NORTH, & EAST INTO

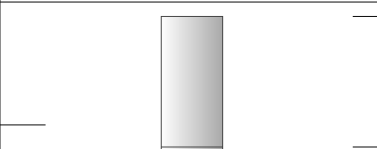
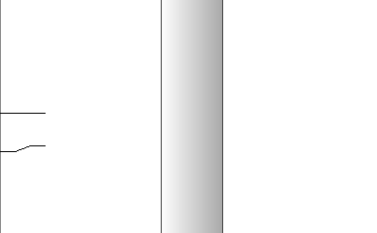
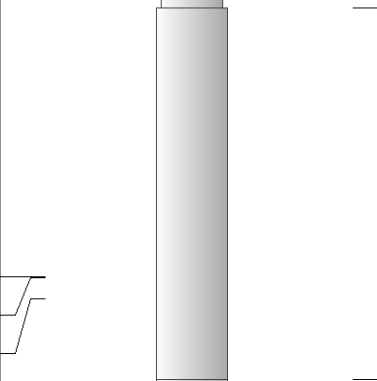
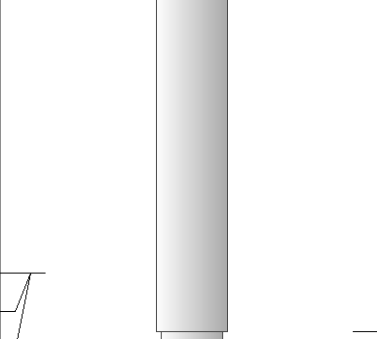
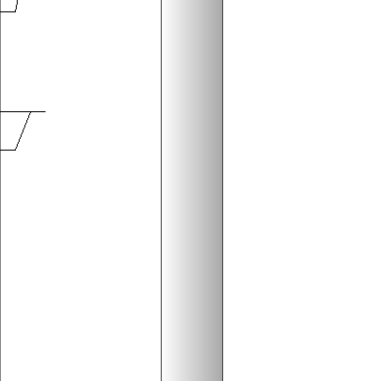
Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

Your Pioneer Energy Services Crew Engineer: IAN MABB Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: JOHN GOLDSMITH Secondary Witness: Secondary Witness: Secondary Witness:
------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------

Top - Bottom

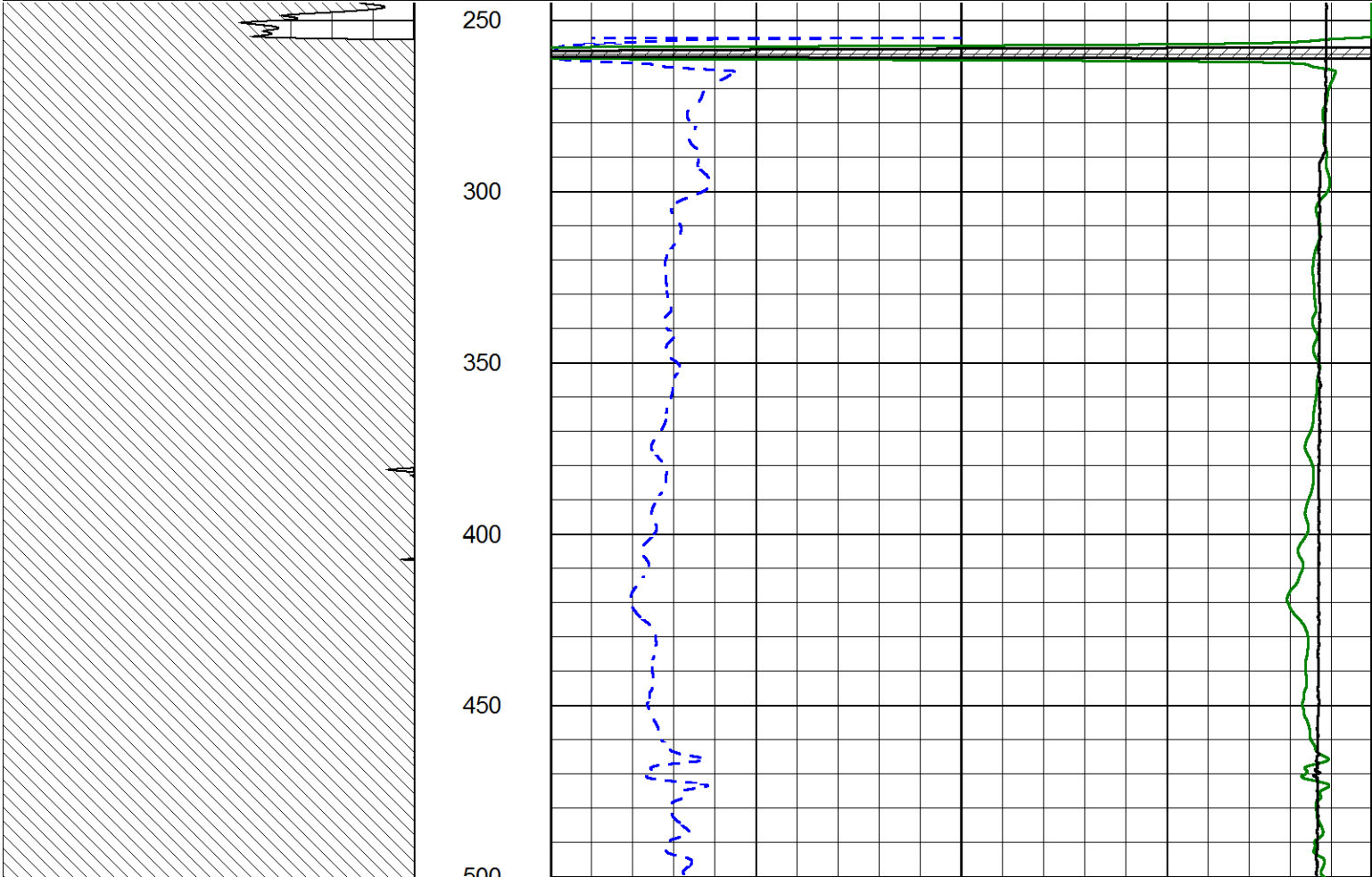
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	498	2
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
10	0	0	5.5	0	4948	121	7.875

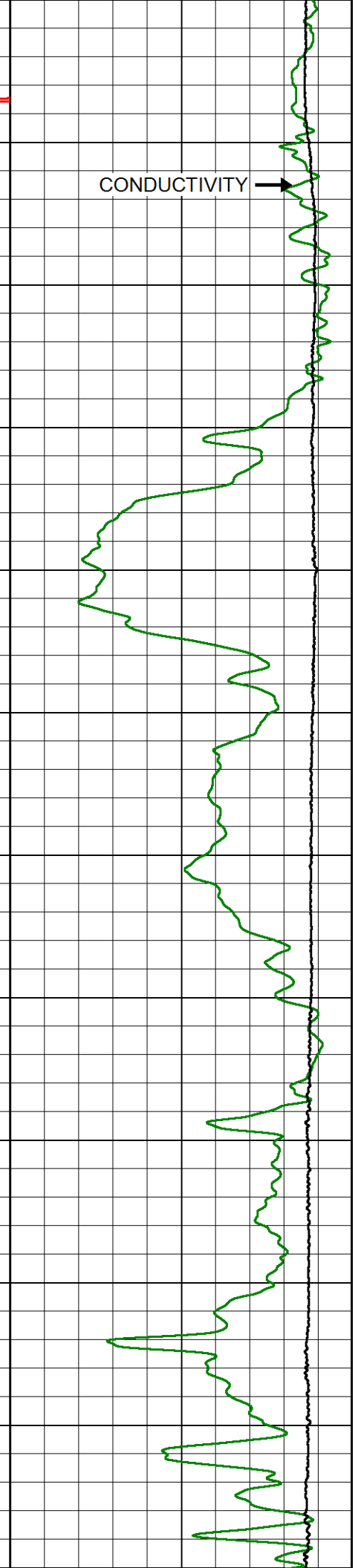
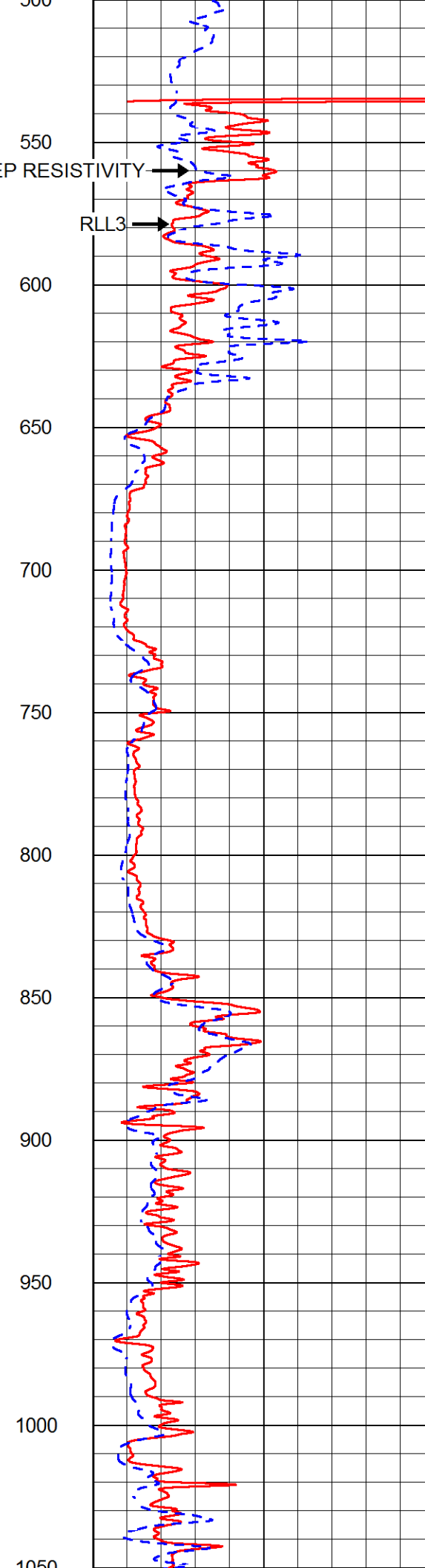
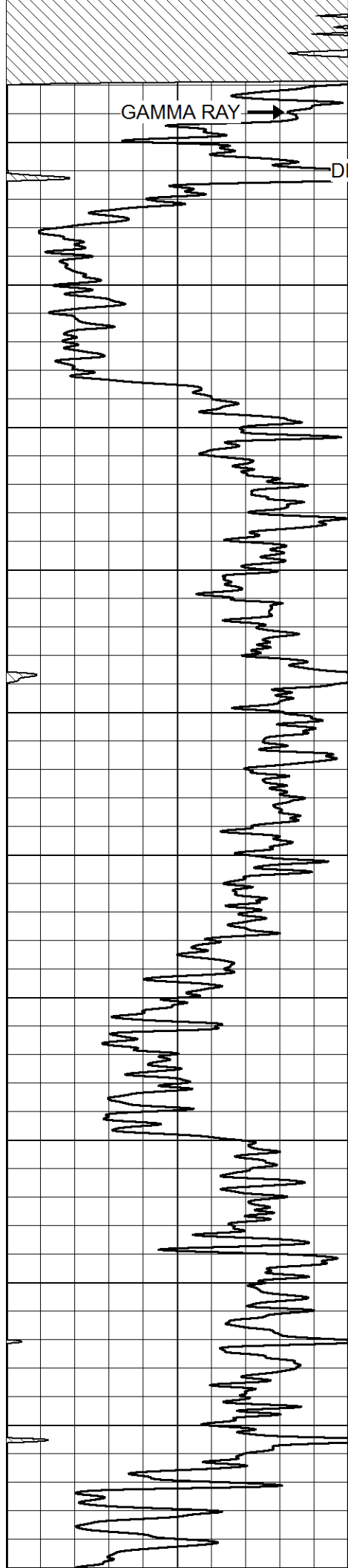
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

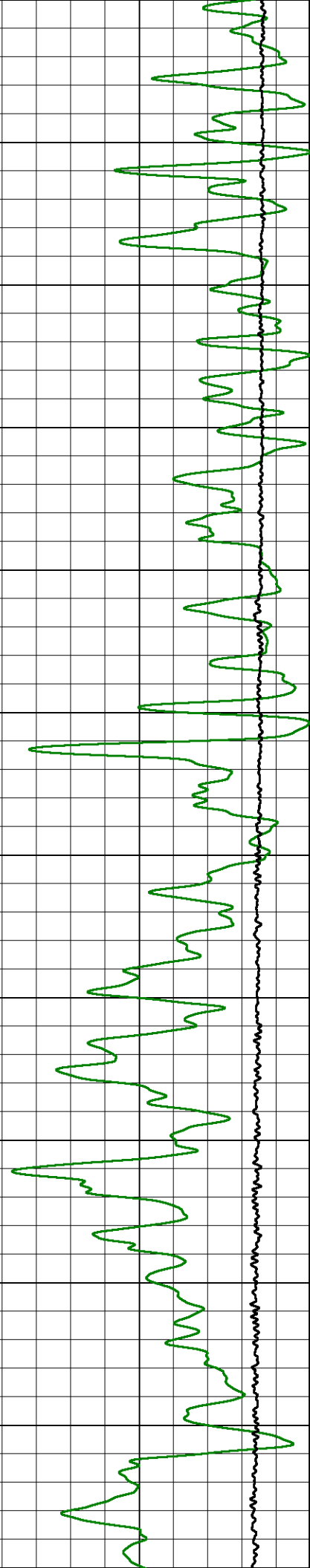
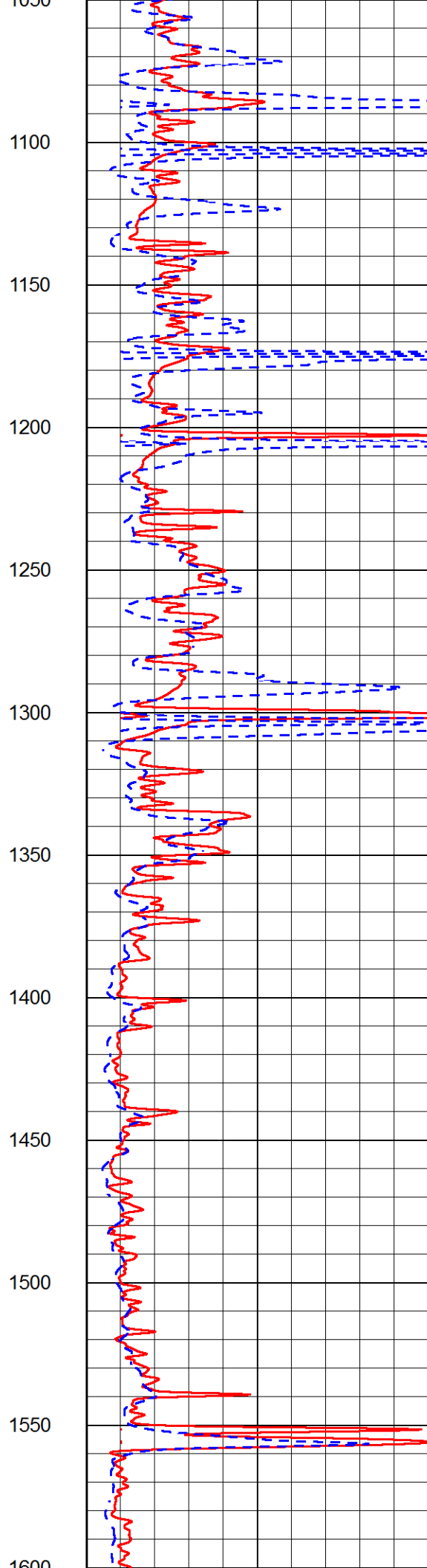
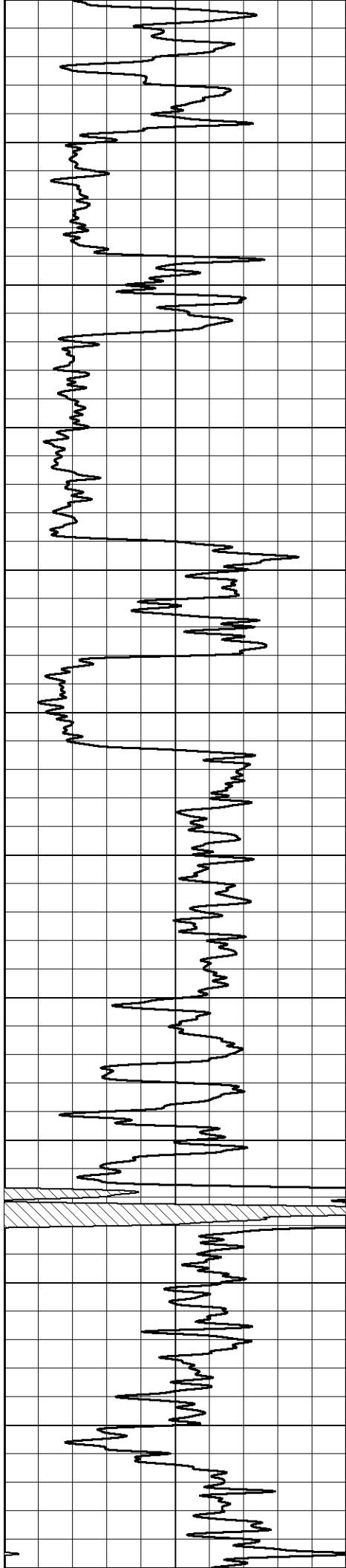
CILD	8.00		DIL-PSI HIGH TEMP (967 (HT))	18.50	3.50	220.00
CILM	4.70					
SP	0.20					
Dataset:		ritchi_exploration_whitham-smith_trust_1.db: field/well/stackmel/pass3.1				
Total length:		43.08 ft				
Total weight:		685.00 lb				
O.D.:		4.00 in				

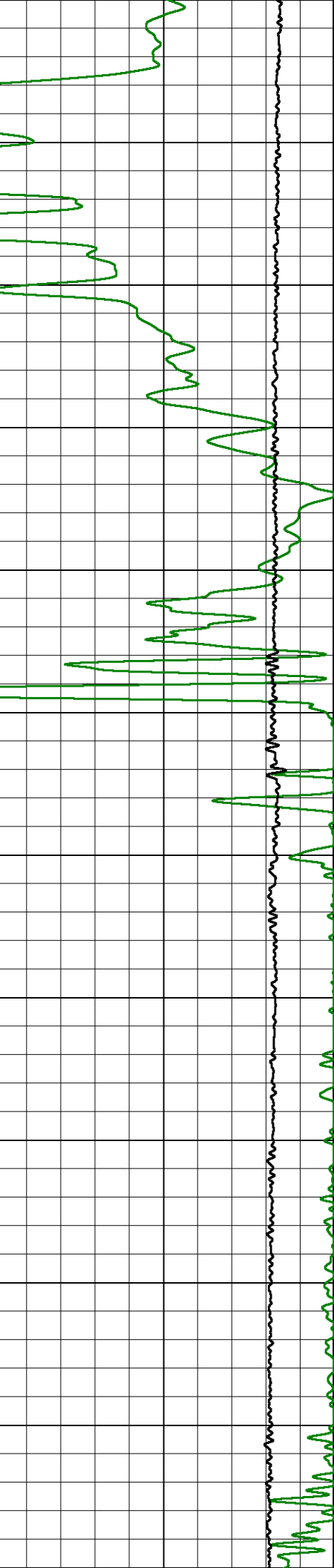
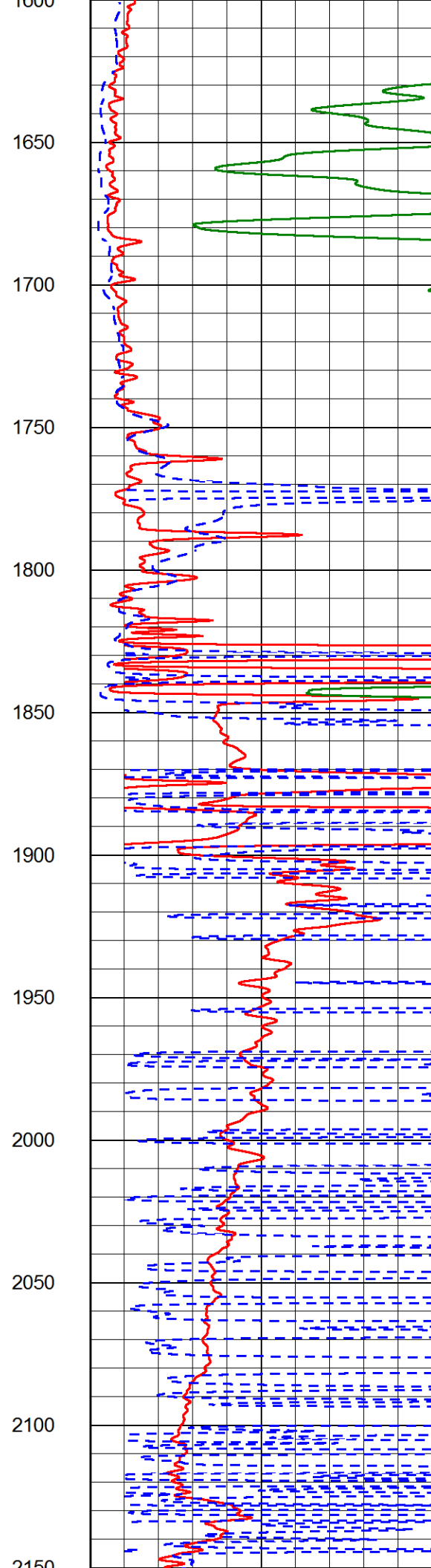
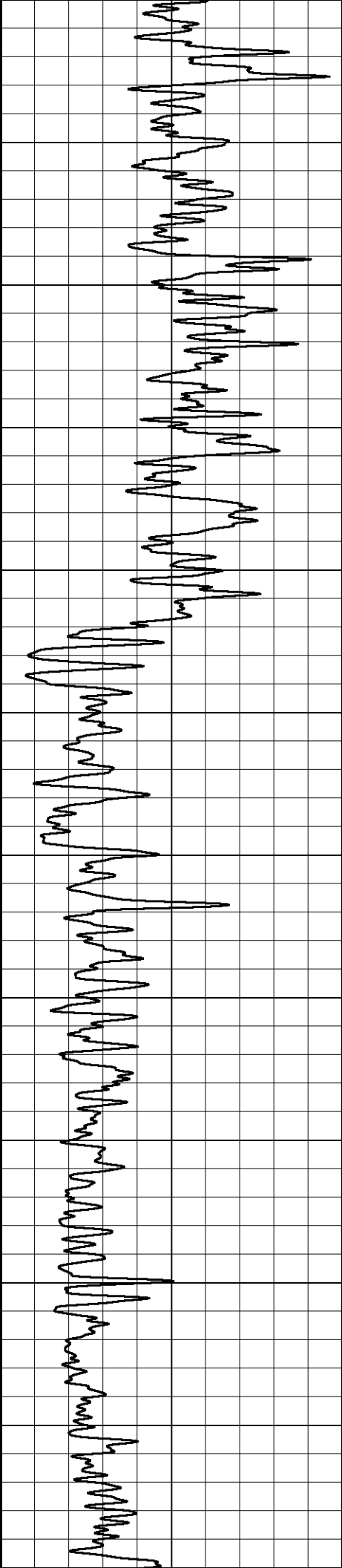
Database File	ritchi_exploration_whitham-smith_trust_1.db
Dataset Pathname	stackmel/pass4.1
Presentation Format	dil2in
Dataset Creation	Fri Sep 07 22:01:45 2018
Charted by	Depth in Feet scaled 1:600

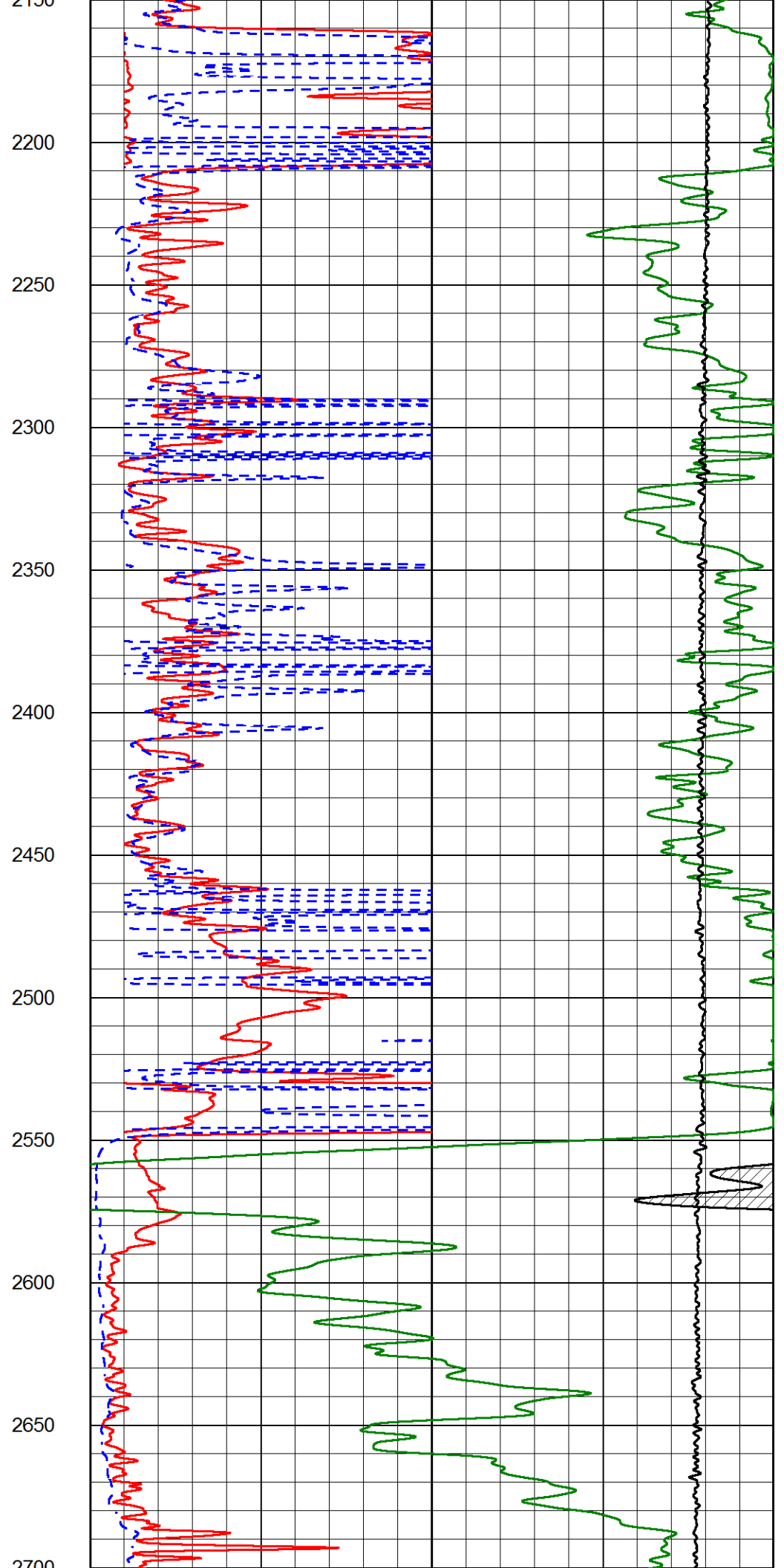
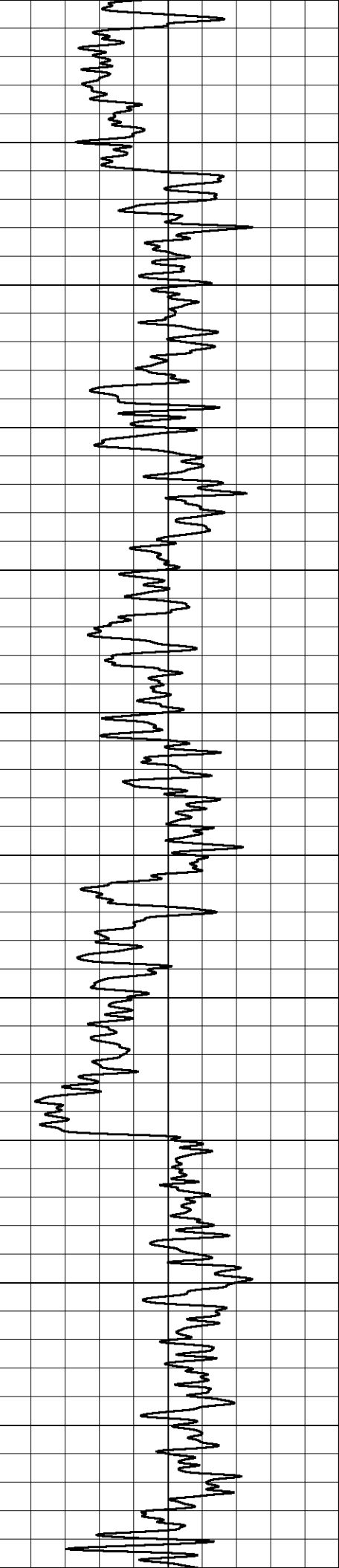
0	GAMMA RAY	1000	CONDUCTIVITY (mmho/m)	0
	(GAPI)	150	Line Tension (lb)	0
			0 RLL3 (Ohm-m)	50
			0 DEEP RESISTIVITY (Ohm-m)	50
			50 RLL3 (Ohm-m)	500
		50 Deep Resistivity (Ohm-m)	500	

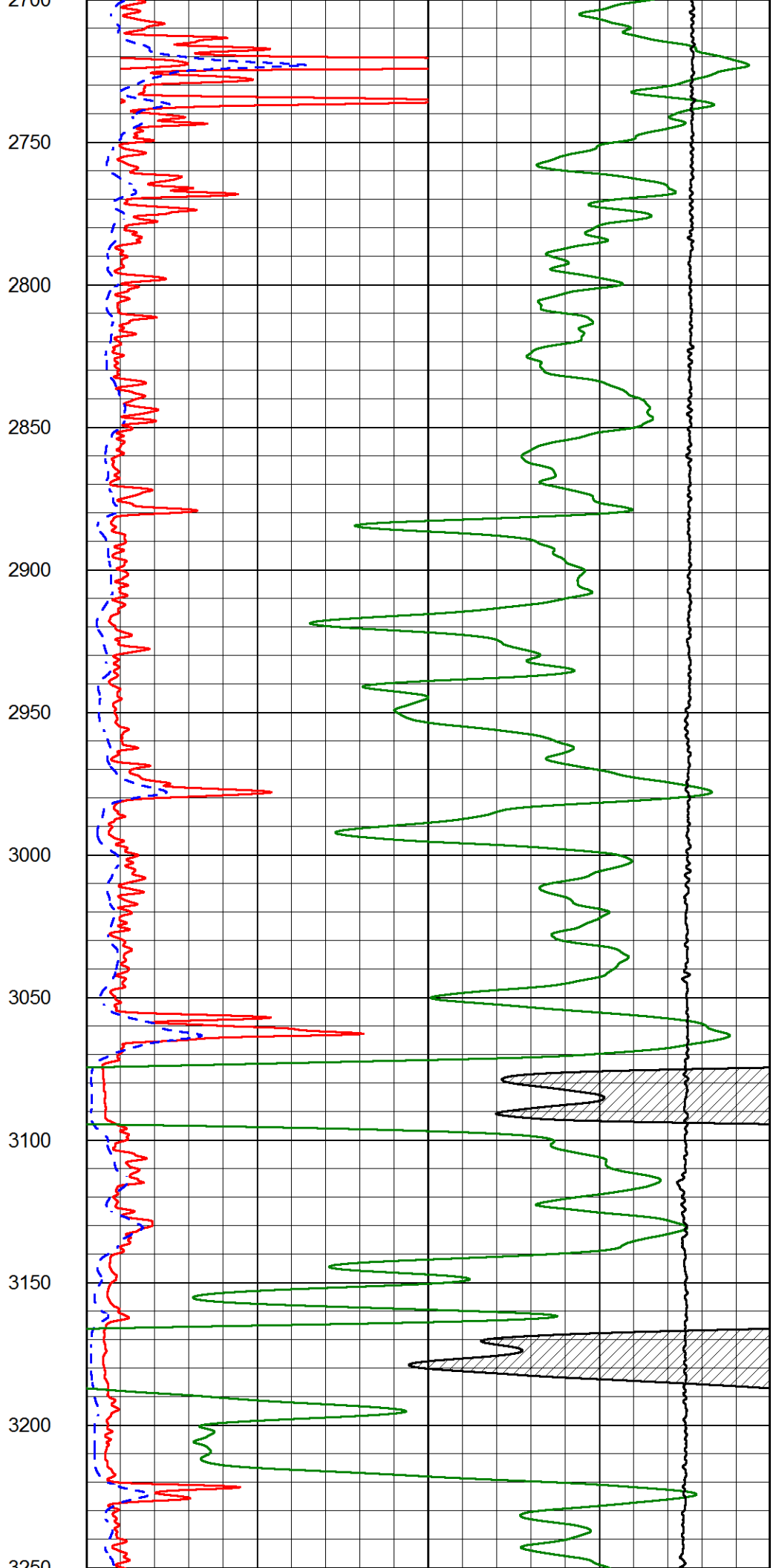
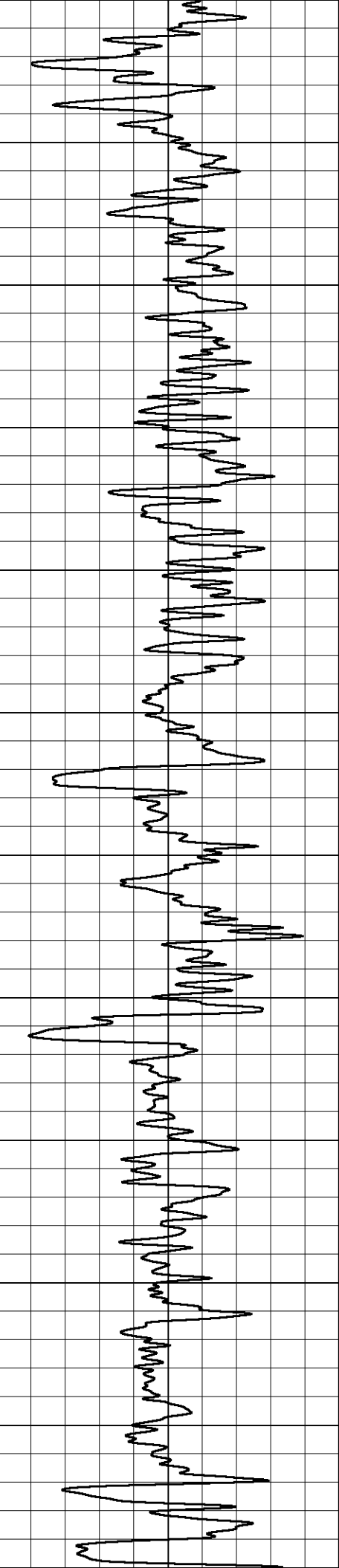




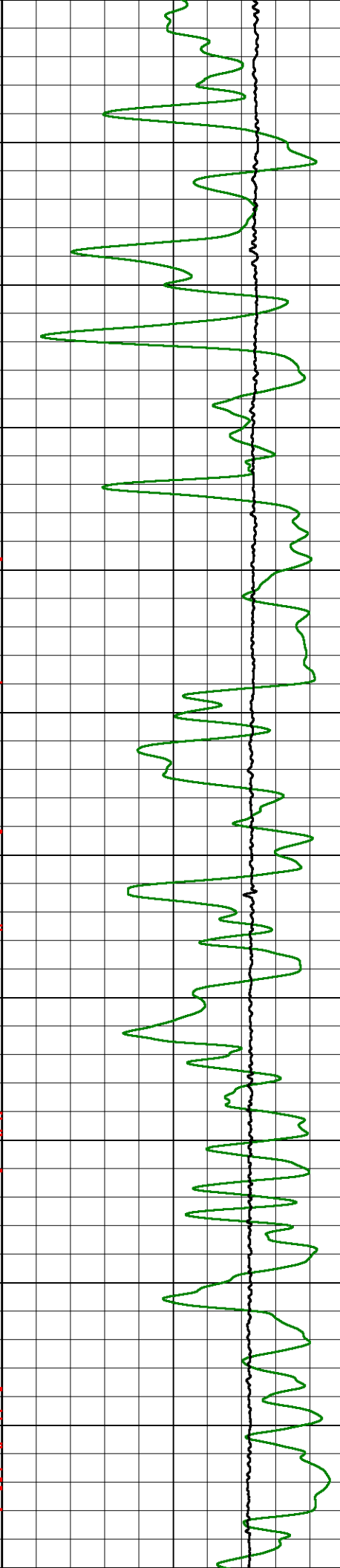
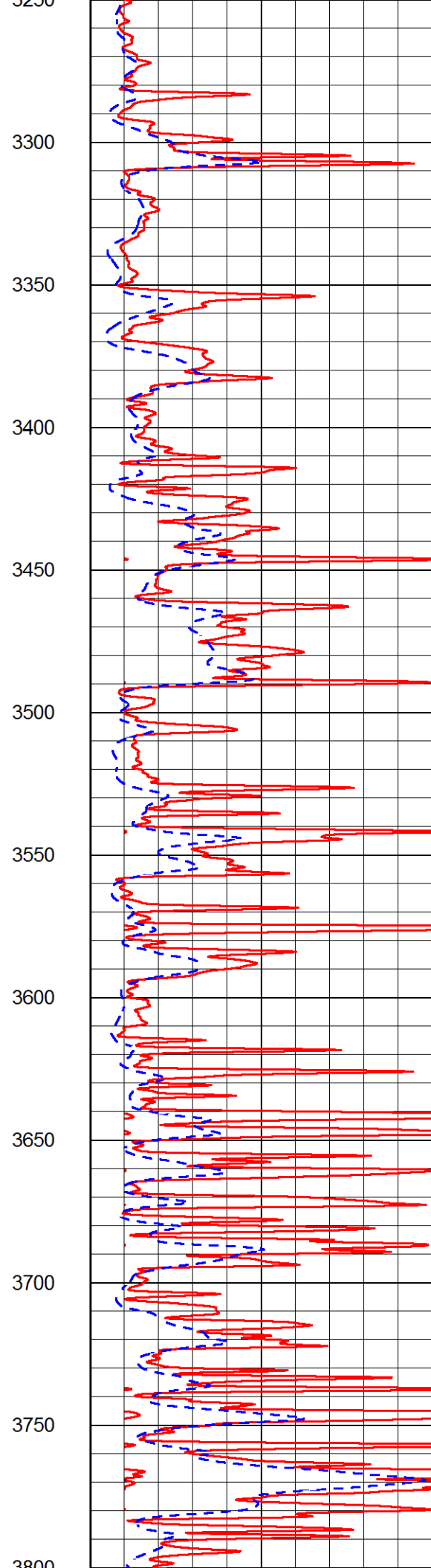
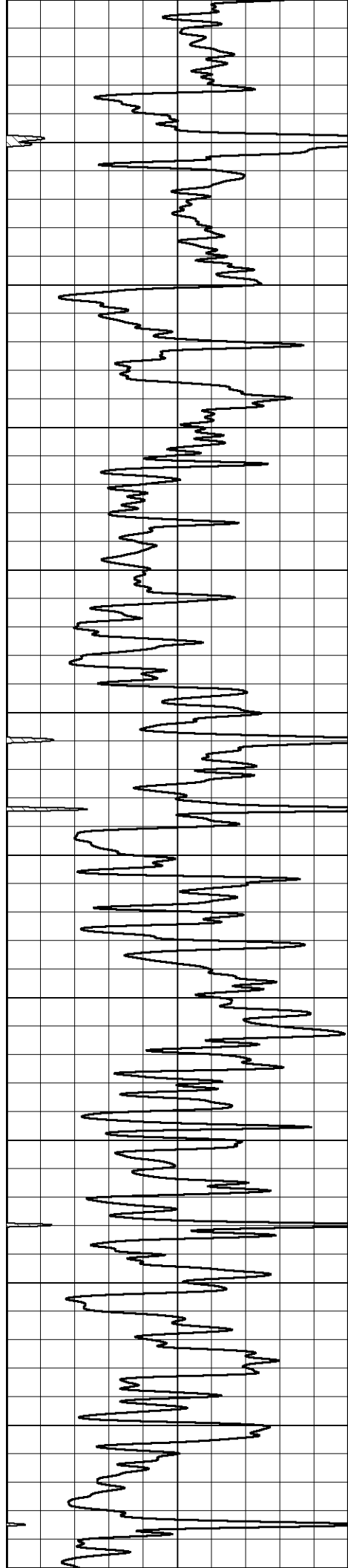


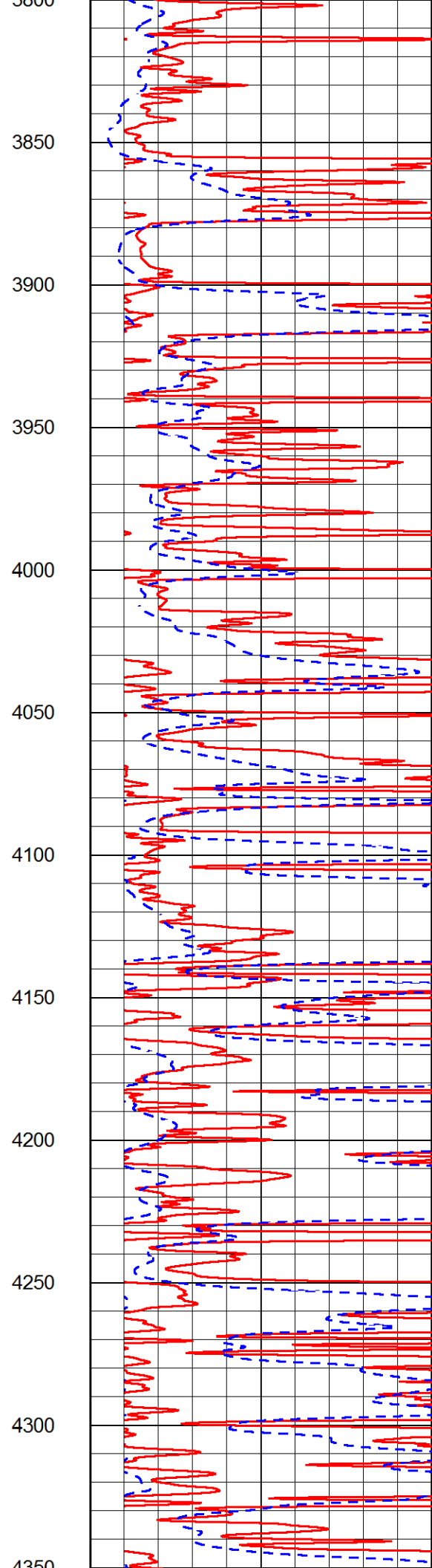
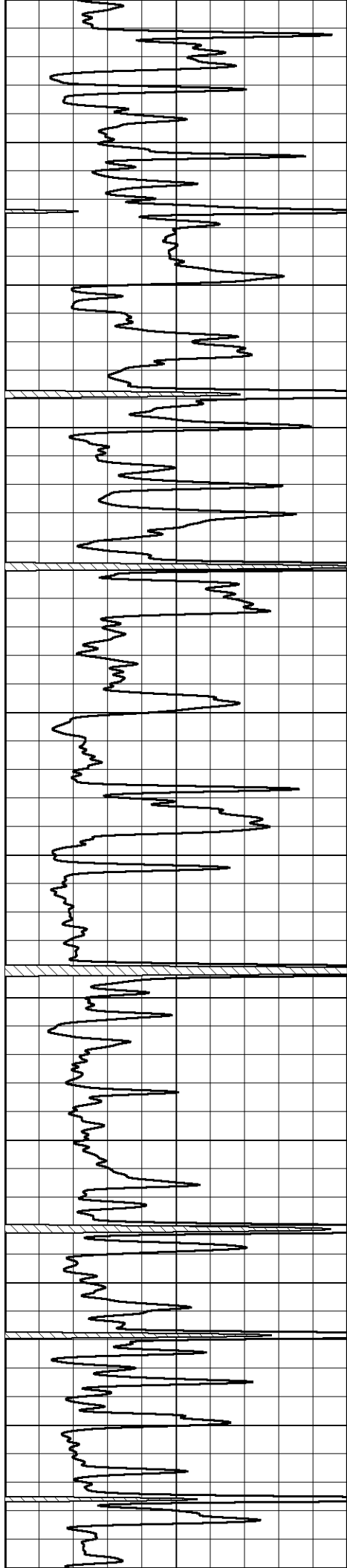


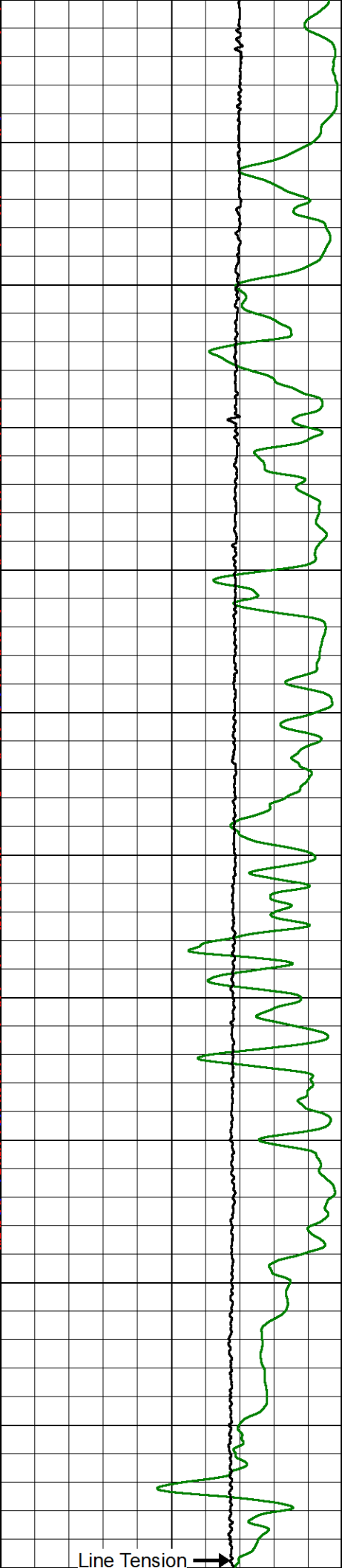
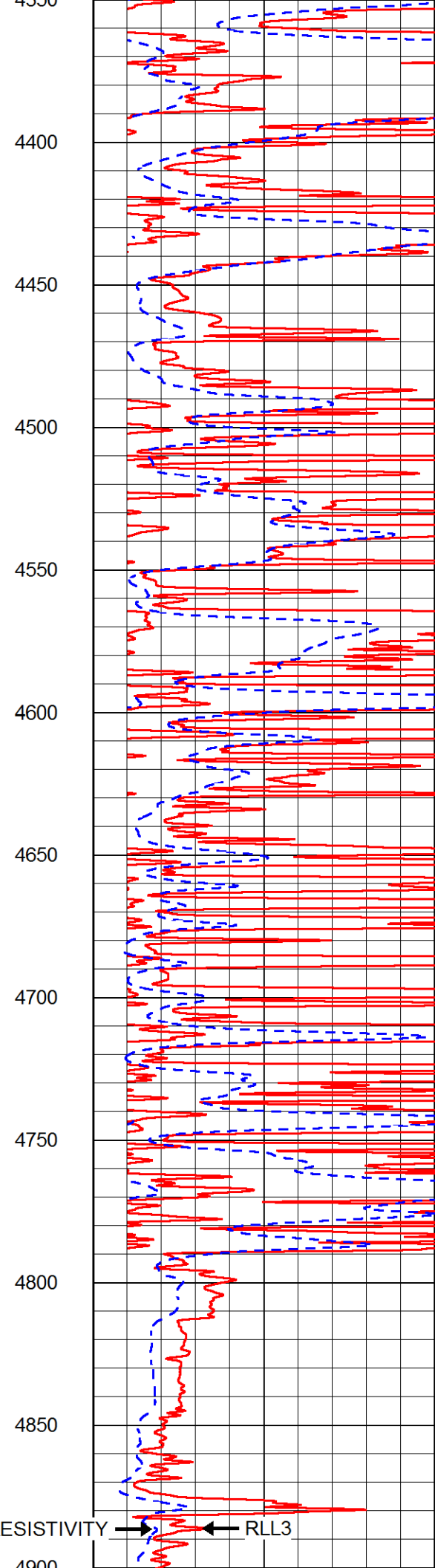
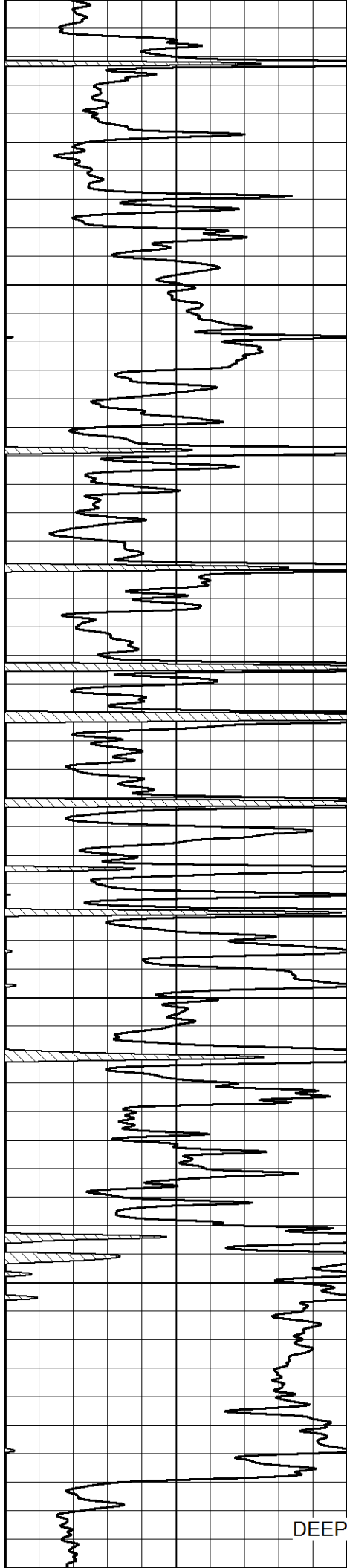








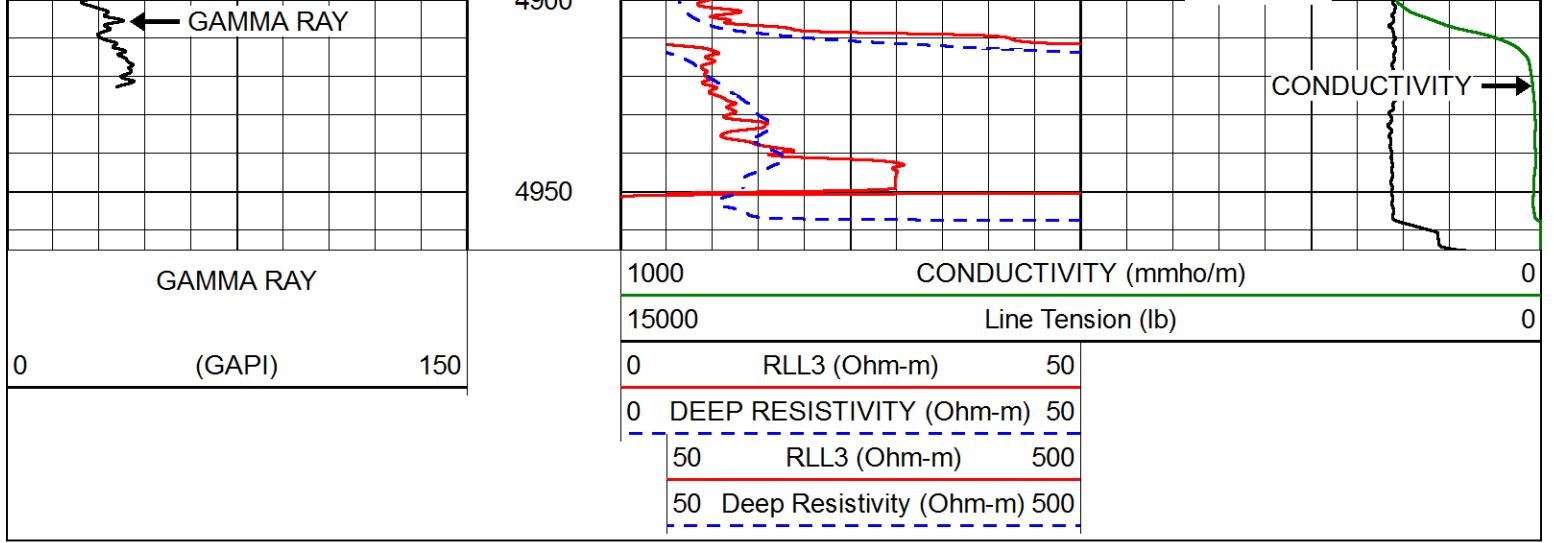




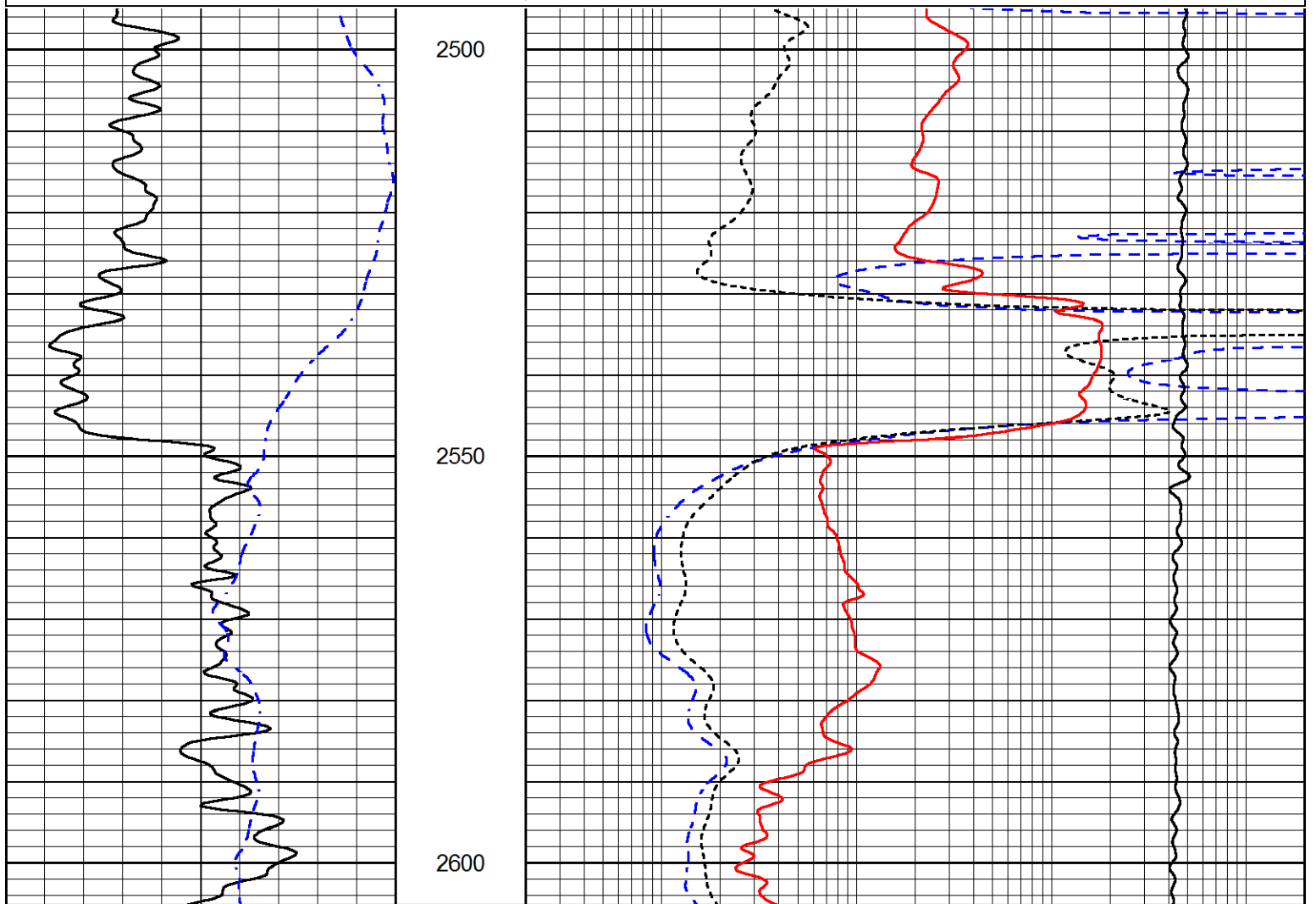
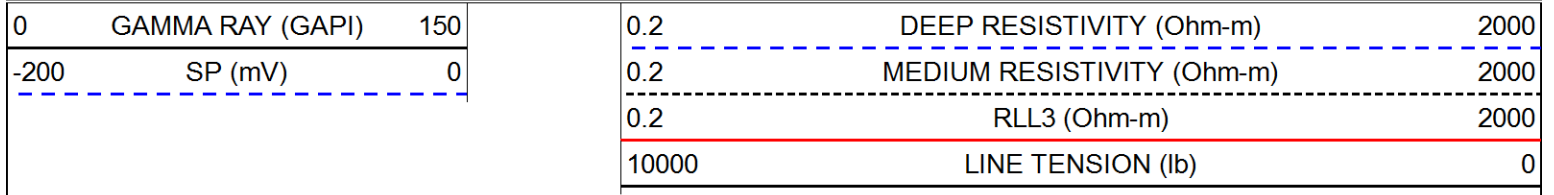
DEEP RESISTIVITY → ← RLL3

Line Tension →

4900



Database File: ritchi\_exploration\_whitham-smith\_trust\_1.db  
 Dataset Pathname: stackmel/pass4.1  
 Presentation Format: dil  
 Dataset Creation: Fri Sep 07 22:01:45 2018  
 Charted by: Depth in Feet scaled 1:240



200	SP (mV)	0
-----	---------	---

0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

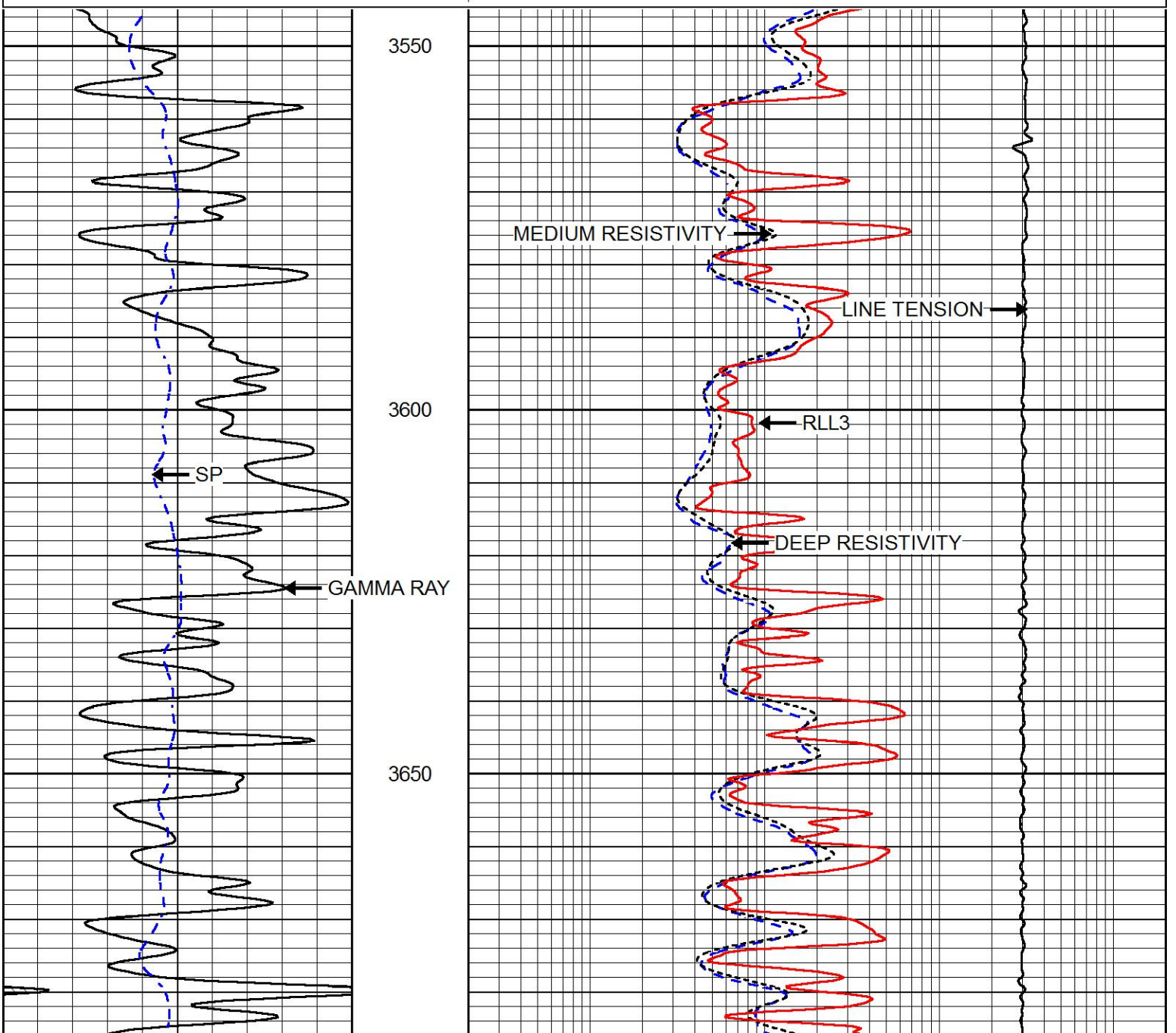


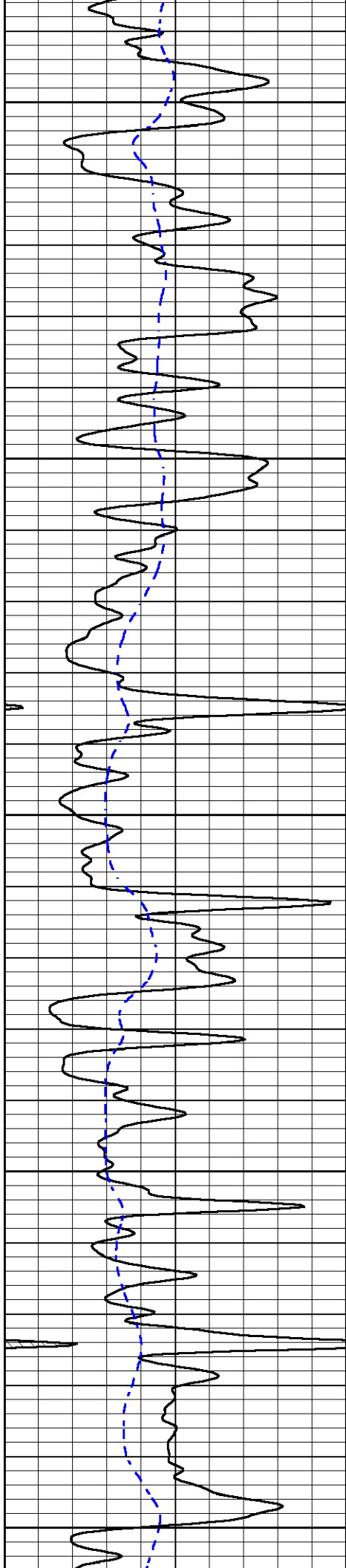
# MAIN PASS

Database File	ritchi_exploration_whitham-smith_trust_1.db
Dataset Pathname	stackmel/pass3.1
Presentation Format	dil
Dataset Creation	Fri Sep 07 21:21:32 2018
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0





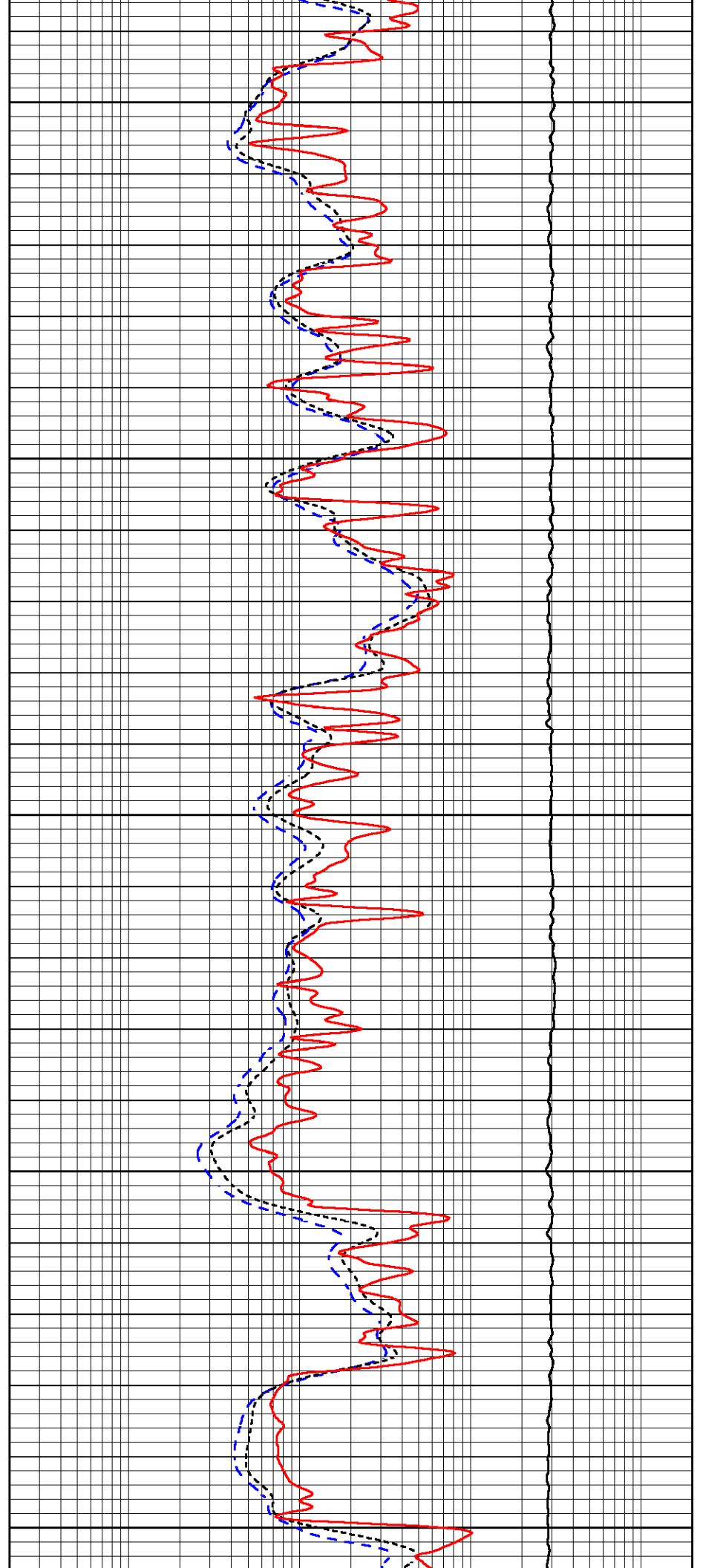
3700

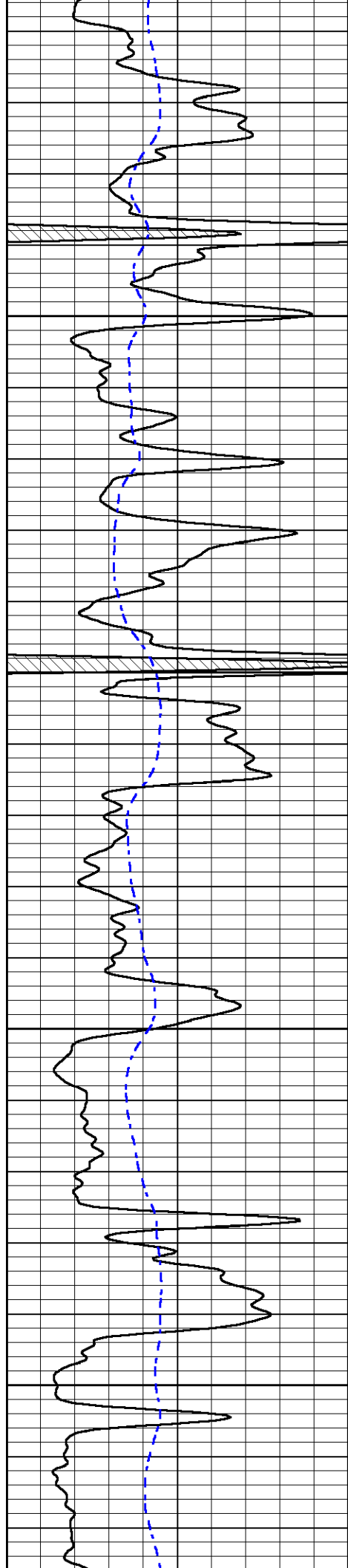
3750

3800

3850

3900



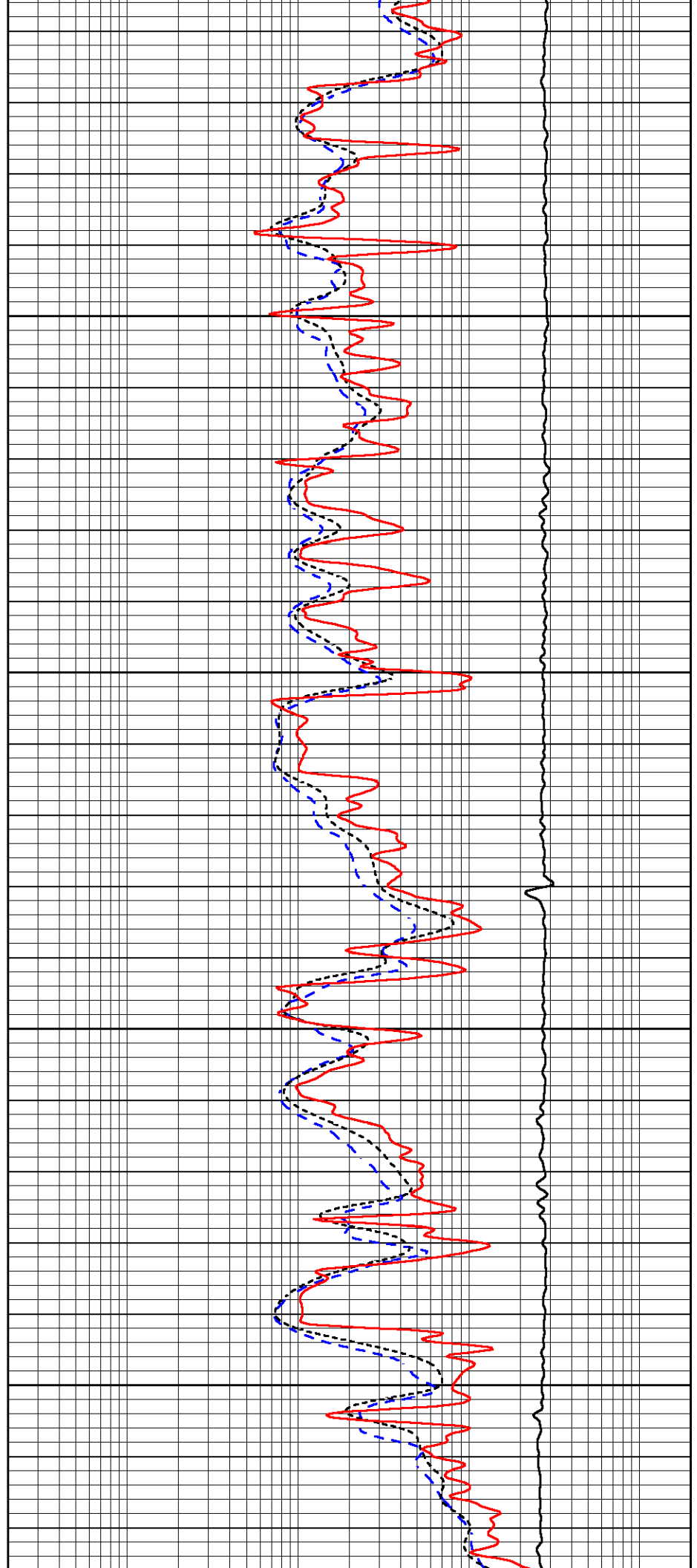


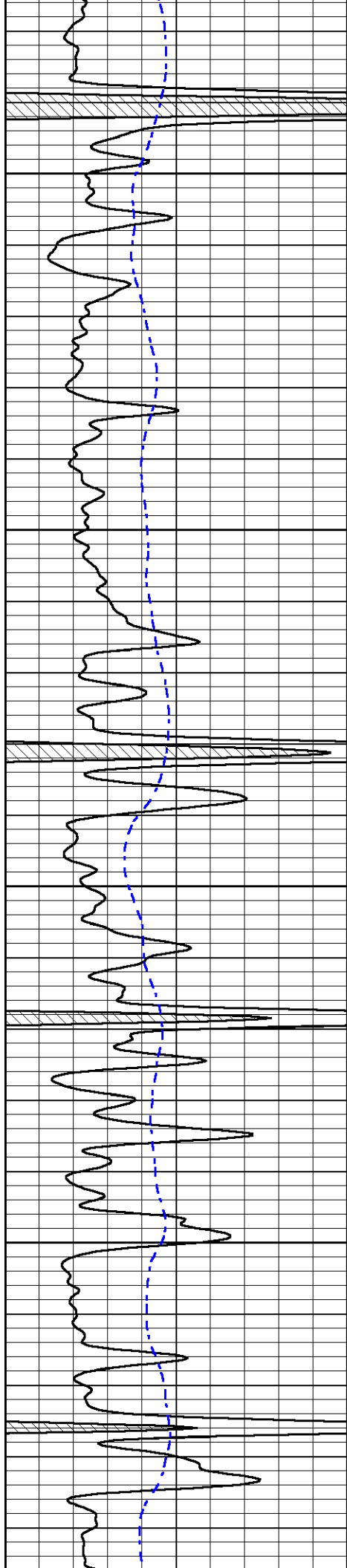
3950

4000

4050

4100



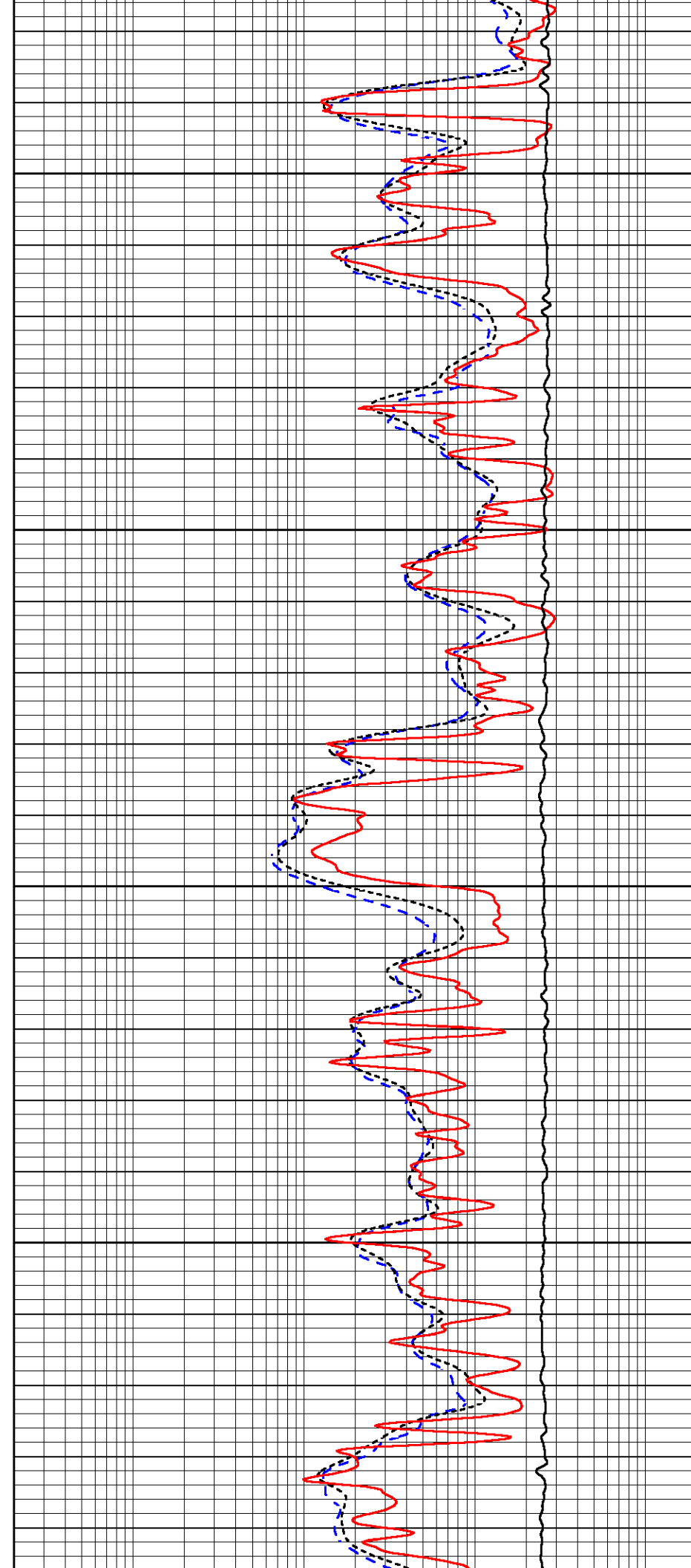


4150

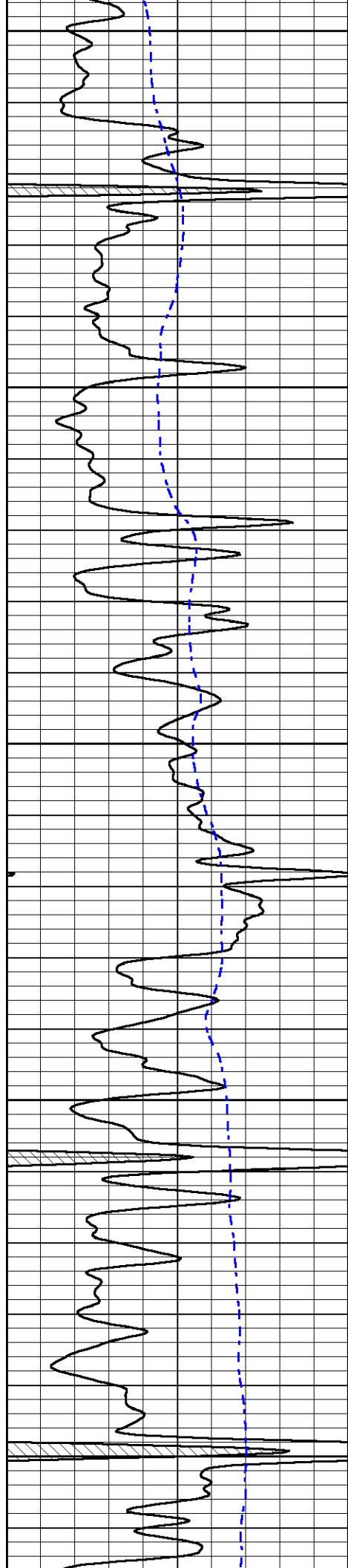
4200

4250

4300







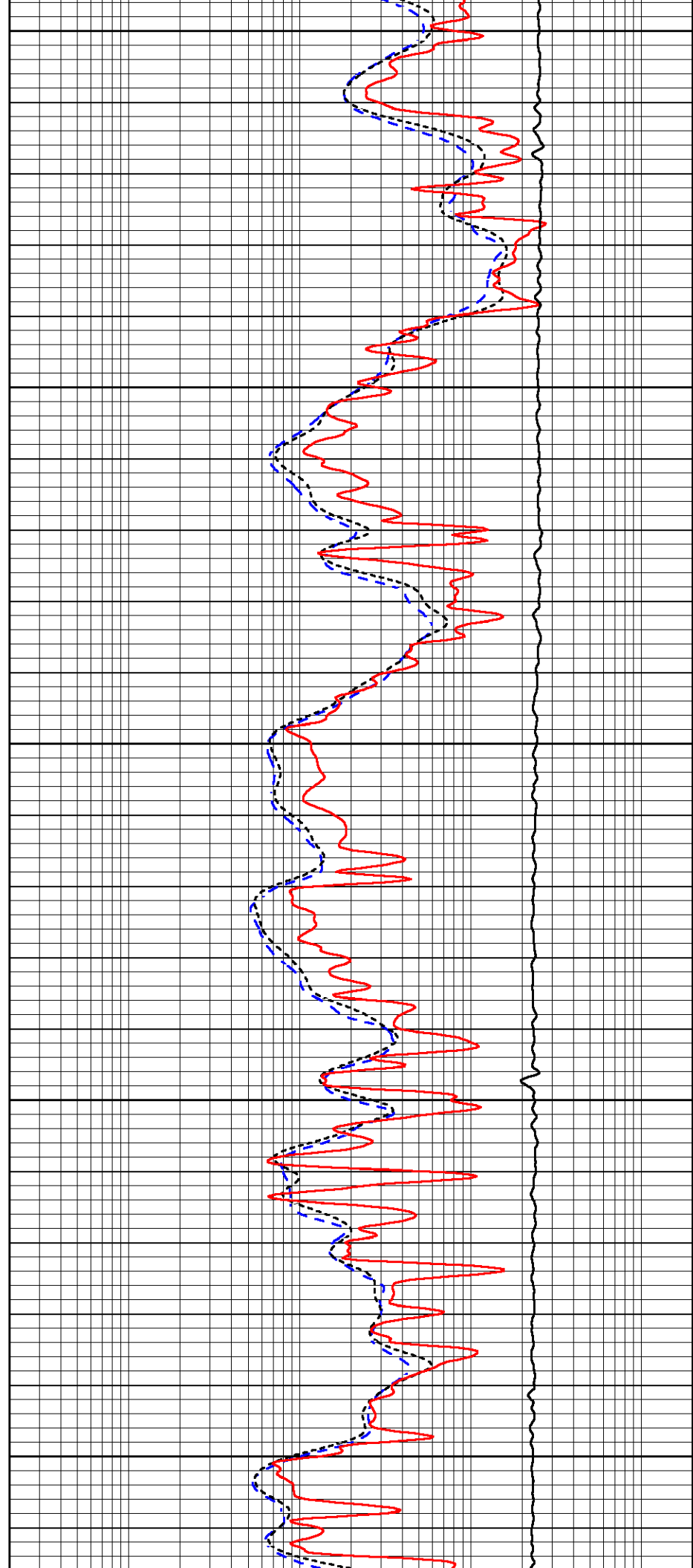
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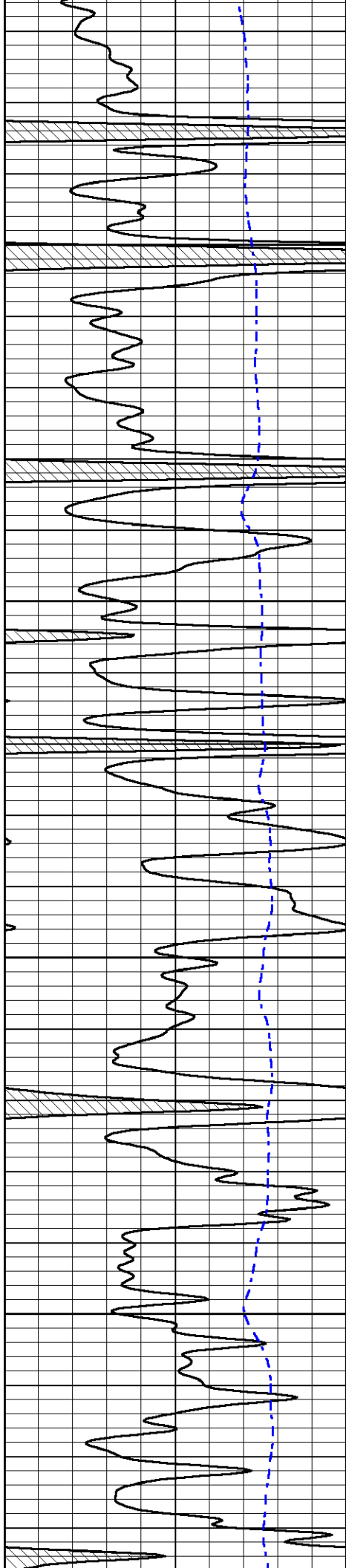
4400

4450

4500

4550



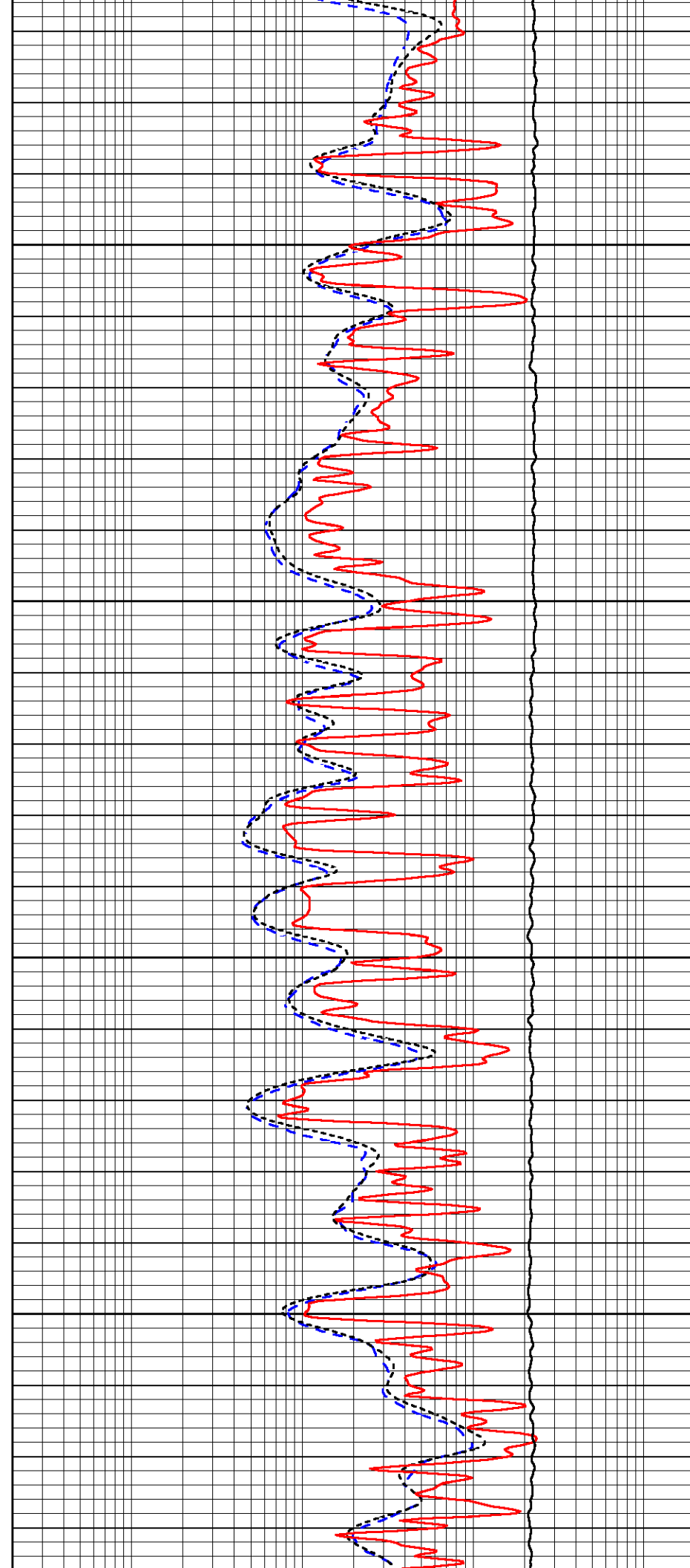


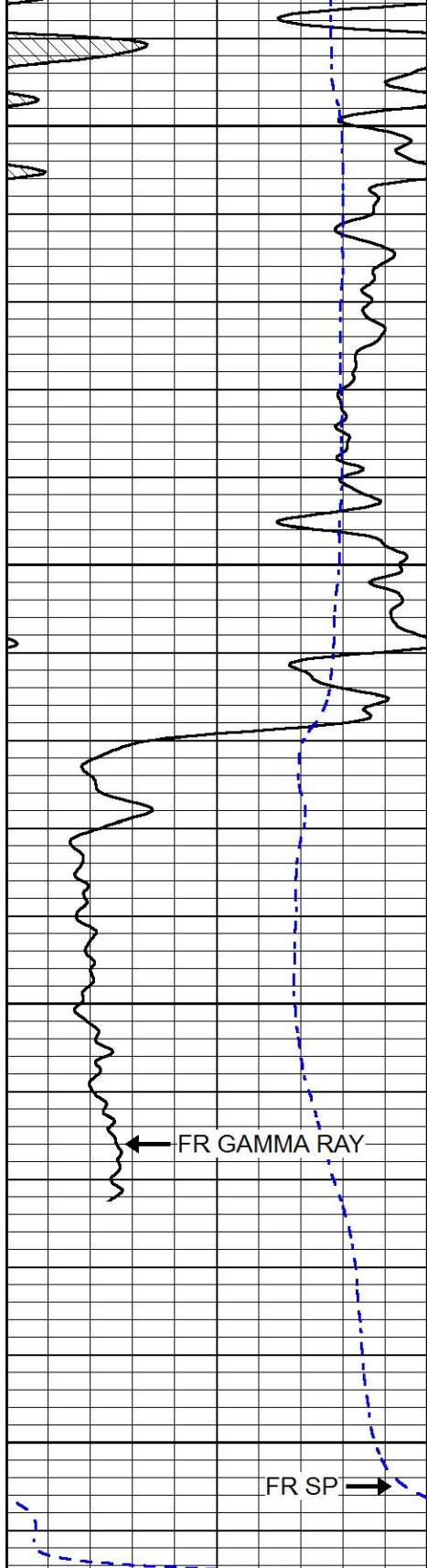
4600

4650

4700

4750



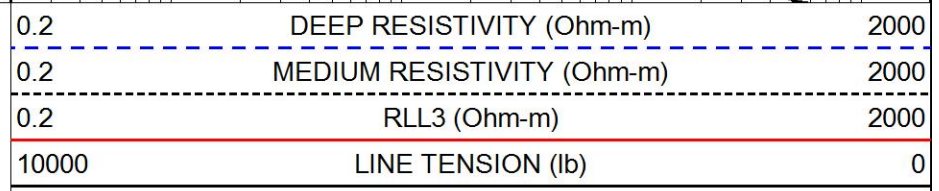
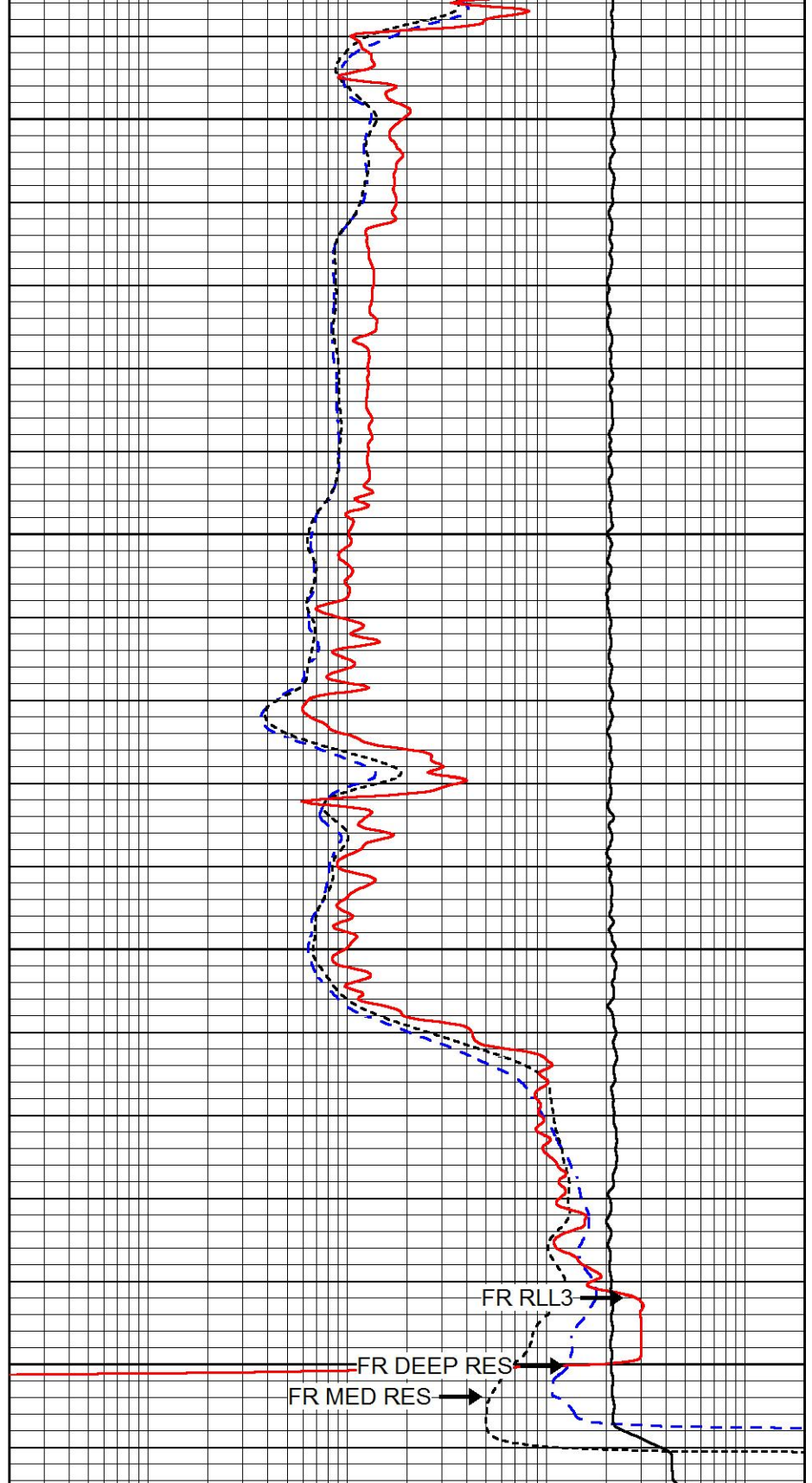
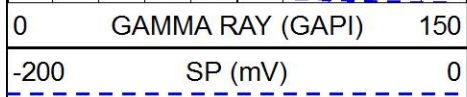


4800

4850

4900

4950

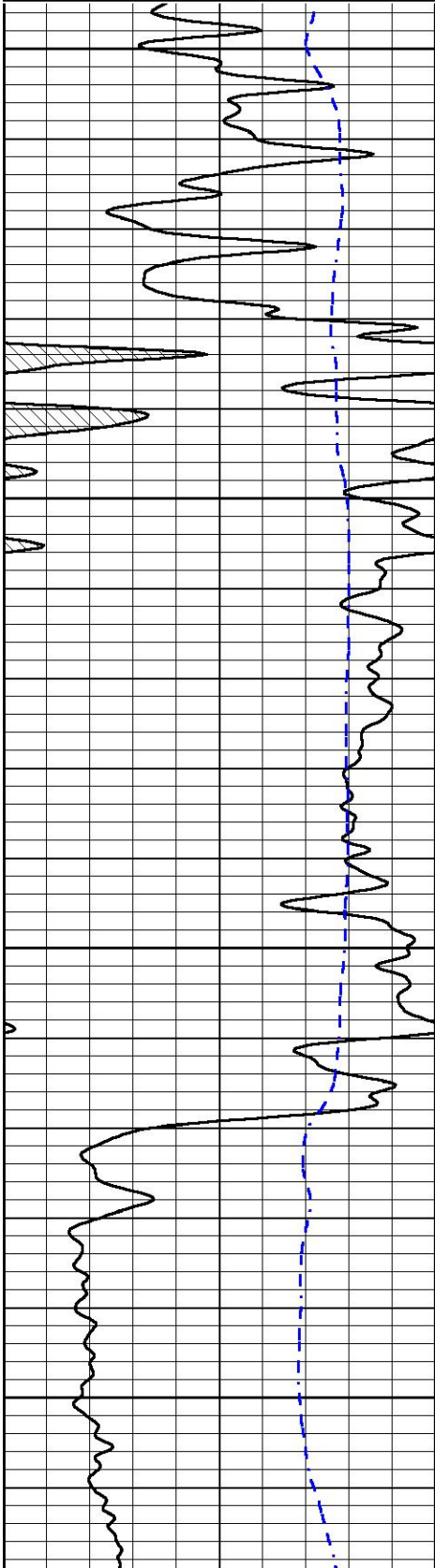


**REPEAT SECTION**

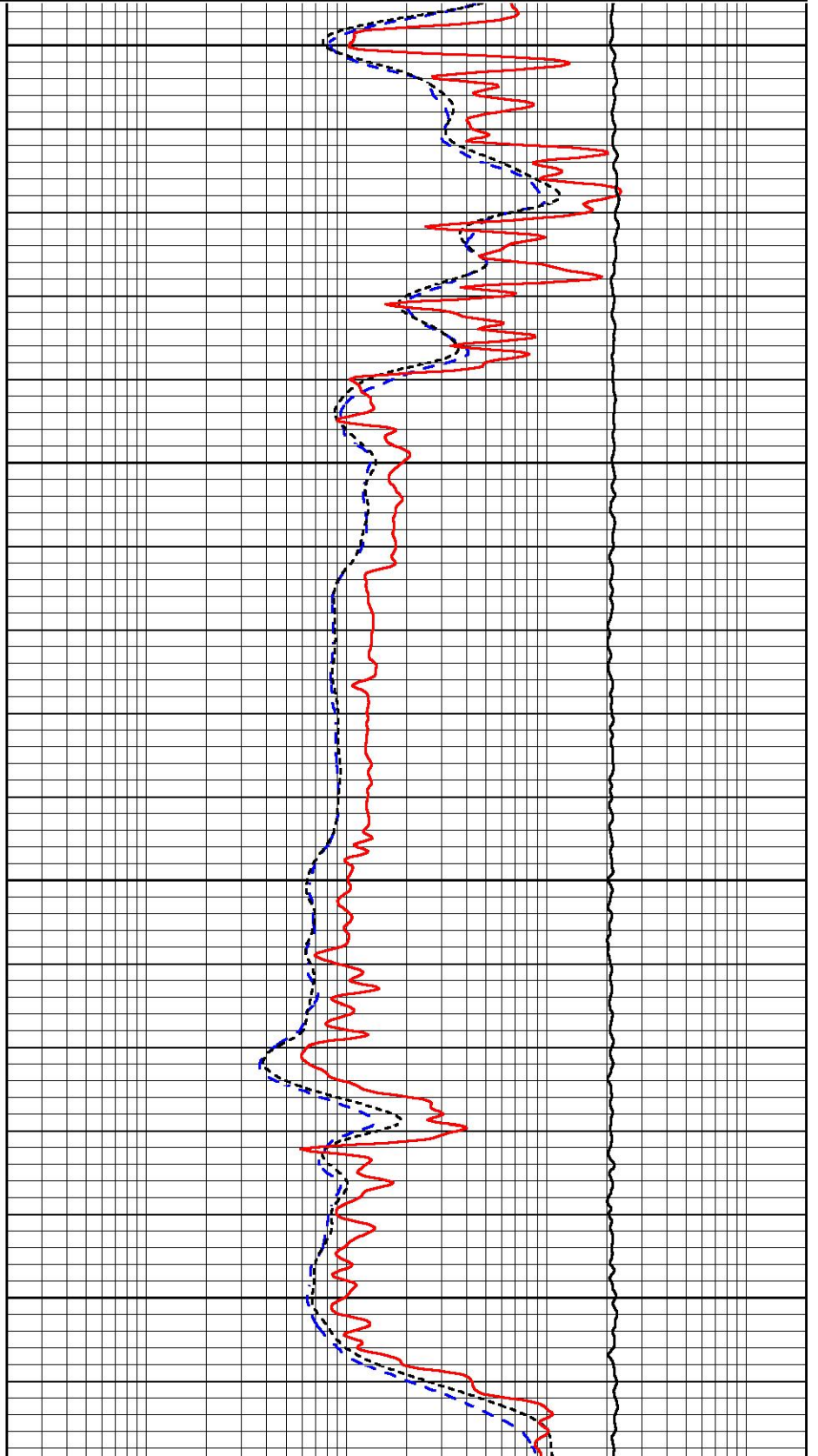
Database File      ritchi\_exploration\_whitham-smith\_trust\_1.db  
 Dataset Pathname    stackmel/pass2.1  
 Presentation Format   dil  
 Dataset Creation    Fri Sep 07 21:25:38 2018  
 Charted by          Depth in Feet scaled 1:240

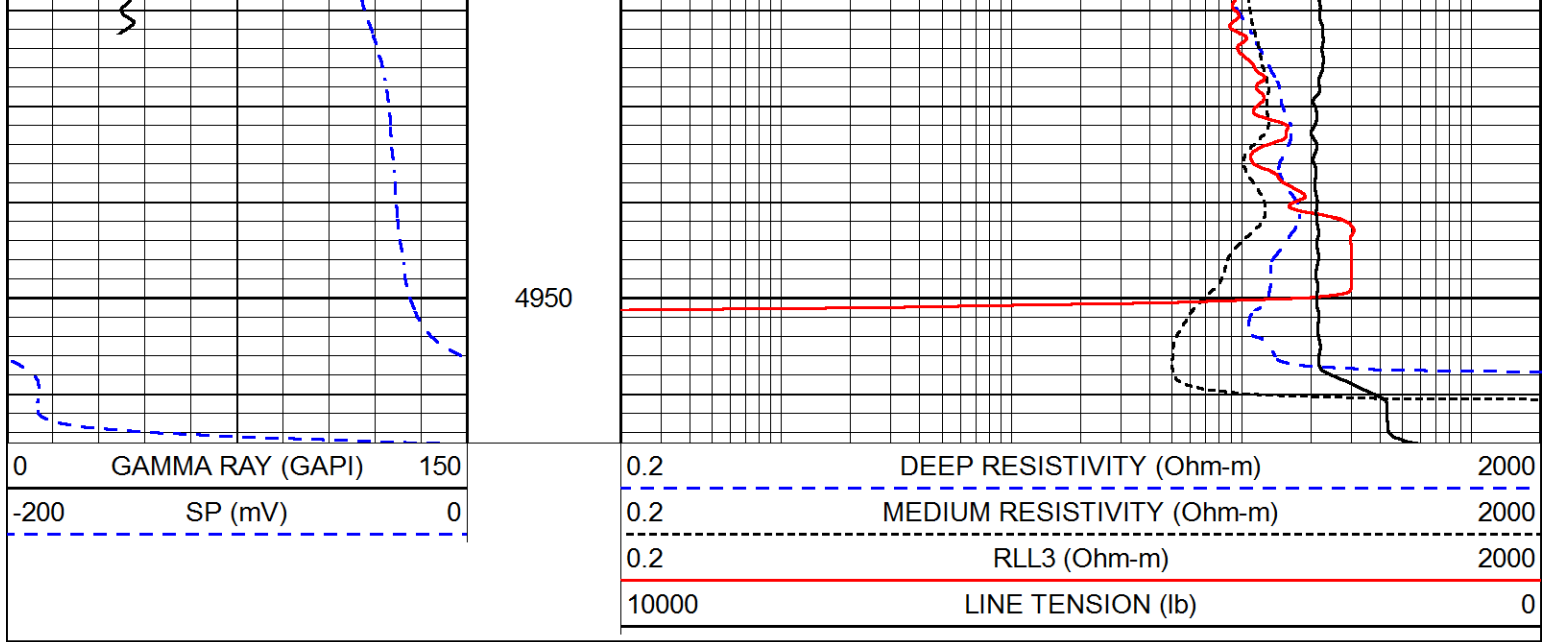
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



4750  
4800  
4850  
4900





### Calibration Report

Database File     ritchi\_exploration\_whitham-smith\_trust\_1.db  
 Dataset Pathname     stackmel/pass3.1  
 Dataset Creation     Fri Sep 07 21:21:32 2018

### Dual Induction Calibration Report

Serial-Model:                     967 (HT)-PSI HIGH TEMP  
 Calibration Performed:             Sun Aug 26 00:41:13 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-20.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

### Microlog Calibration Report

Serial-Model:                     PSI-01-PSIML  
 Performed:                         Thu Aug 30 10:35:41 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	23000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	31000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.9500

### Compensated Density Calibration Report

Serial-Model:                     144-84-M&W  
 Source / Verifier:                 16955B / 2ci  
 Master Calibration Performed:     Thu Aug 30 10:10:19 2018

### Master Calibration

	Density	Far Detector	Near Detector
Magnesium	1.755	4967.47	6024.92

Magnesium	1.755	g/cc	4867.47	6031.92	cps
Aluminum	2.650	g/cc	906.23	3806.99	cps

Spine Angle = 74.69

Density/Spine Ratio = 0.514

	Size		Reading
Small Ring	5.00	in	1.09
Large Ring	15.00	in	1.03

Compensated Neutron Calibration Report

Serial Number:	207-MW
Tool Model:	M&W
Calibration Performed:	FRI AUG 24 10:30:30 2018

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025
Long Space	460.00 cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number:	89	
Tool Model:	M&W	
Calibration Performed:	Fri Aug 24 11:16:10 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company	RITCHIE EXPLORATION INC.
Well	WHITHAM-SMITH TRUST #1
Field	WILDCAT
County	WICHITA
State	KANSAS